

**REMARKS**

The Office Action mailed on December 22, 2006, has been reviewed and the comments of the Patent and Trademark Office have been considered. Prior to this paper, claims 1-18 were pending. By this paper, Applicant adds claims 19-22 and does not cancel any claims. Therefore, claims 1-22 are now pending.

Applicant respectfully submits that the present application is in condition for allowance for at least the reasons that follow.

**Claim Objections**

Claims 12 and 16 stand objected to as containing informalities. In response, in order to advance prosecution, and without prejudice or disclaimer, Applicant amends these claims and respectfully requests reconsideration in view of the above amendments. Applicants thank Examiner Chuo for recommending changes to the claims to alleviate the objections; changes which Applicant has embraced.

**Rejections Under 35 U.S.C. §112, Second Paragraph**

In the Office Action, claims 3, 5 and 15 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. In order to advance prosecution, and without prejudice or disclaimer, Applicant has amended these claims. Reconsideration is requested.

**Claim Rejections Under 35 U.S.C. §103(a)**

In the Office Action, Claims 1, 7, 13 and 16-18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Okamoto (EP 0823743 in view of Kanbara (JP 2000-149970), with claim 2 being rejected in view of this combination when combined with Koizumi (U.S. Patent No. 4,818,845). Claims 3-6 are rejected in view of Okamoto when combined with Kanbara and Gerstmann (U.S. Patent No. 5,772,113). Claims 8 and 9 are rejected in view of Okamoto when combined with Kanbara and Breault (U.S. Patent No. 6,699,612). Claim 10 is

rejected in view of Okamoto, Kanbara and Breault when combined with Yamada (U.S. Patent No. 5,482,790). Claim 11 is rejected in view of Okamoto in view of Kanbara and Breault and Roberts (U.S. Patent Publication No. 2001/0055707). Claim 12 is rejected as obvious in view of Okamoto, Kanbara, Breault when combined with Bonville (U.S. Patent No. 6,248,462). Claims 14 and 15 are rejected as obvious in view of Okamoto, Kanbara, Breault and Nelson (U.S. Patent No. 5,412,475).

In response, in order to advance prosecution, and without prejudice or disclaimer, Applicant amends the claims as seen above, and respectfully submits that these claims are allowable for at least the following reasons.

Applicant relies on MPEP § 2143, which states that:

[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

It is respectfully submitted that at least the first and second criteria of MPEP § 2143 were not met in the Office Action, and that the third criteria cannot be met with respect to the claims now pending in view of the cited references.

#### The Cited References Do Not Suggest All Claim Recitations

Even if the first requirement of MPEP § 2143 were to be considered satisfied in the Office Action (which it is not, as explained below), the cited references still do not meet the third requirement, which is that “the prior art reference (or references when combined) must teach or suggest all the claim limitations.”

Claim 1 recites a fuel cell device that includes a hot medium flow passage disposed around a water contact section of a water storage unit. Claim 1 further recites that the fuel cell device has a plurality of antifreeze circulation flow passages: a first antifreeze circulation

flow passage that includes the hot medium flow passage along with an antifreeze heater, and a second antifreeze circulation flow passage including the hot medium flow passage and a radiator. That is, the fuel cell device of claim 1 includes two antifreeze flow passages, each of which include the hot medium flow passage. An exemplary embodiment of such features may be seen in Fig. 1, where hot medium flow passage 25, which is disposed around a water contact section of a water storage unit 5, is part of a first antifreeze circulation flow passage and a second antifreeze circulation flow passage, the former including an antifreeze heater 17, the latter including a radiator 11.

Neither Okamoto nor Kanbara discloses or suggests the just-mentioned features. The Office Action recognizes that Okamoto does not teach a hot medium flow passage disposed in a water contact section of a water storage unit to allow an antifreeze solution heated by an antifreeze heater, to flow as claimed, and instead points to Kanbara. Assuming *arguendo* that Kanbara remedies this deficiency of Okamoto, Kanbara does not teach a “branched” antifreeze circulation flow system – two different flow passages that both include a hot medium flow passage as claimed. Instead, Kanbara merely teaches a cooling water circulation flow passage 16 in fluid communication with a fuel cell 1, a water tank 4 and a heater 15 – the fuel cell 1, the water tank 4 and the heater 15 are serially connected to one another by the circulation flow passage 16 (see Fig. 1 of Kanbara). Accordingly, there is, at most, only one flow passage in Kanbara. Kanbara does not have a branched antifreeze circulation flow system. Accordingly, even if the alleged hot medium flow passage of Kanbara were to be incorporated into Okamoto, the resulting device would still not teach each element of claim 1. Thus, the third requirement of MPEP § 2143 is not satisfied by the asserted combination of Okamoto and Kanbara.

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Claim 17 is allowable for the pertinent reasons that make claim 1 allowable. Claim 17 is further allowable because, as the Office Action correctly recognizes, it utilizes means-plus-function language and thus it embraces 35 U.S.C. §112, 6<sup>th</sup> paragraph claim construction. Accordingly, the standard for examination of claim 17 must be different than that utilized for the other claims. However, despite the recognition that claim 17 must be

analyzed in view of 35 U.S.C. § 112, 6<sup>th</sup> paragraph, the Office Action appears to treat claim 17 in the same manner as it treats claim 1. In this regard, the rejections outlined in the Office Action in view of claim 17 does not comport with the requirements of MPEP § 2183 for examining claims under 35 U.S.C § 112, 6<sup>th</sup> paragraph, which states that if “the examiner finds that a prior art element (A) performs the function specified in the claim, (B) is not excluded by any explicit definition provided in the specification for an equivalent, and (C) is an equivalent of the means- (or step-) plus function limitation, *the examiner should provide an explanation and rationale in the Office Action as to why the prior art element is an equivalent.*” (Emphasis added.) Accordingly, if claim 17 is not allowed in any next Office Action in view of the prior art, Applicant respectfully requests that an explanation as to why claim 17 was not allowed that meets the requirements of MPEP § 2183 be provided in that next Office Action.

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Dependent claims 2-16 are allowable at least due to their ultimate dependency from claim 1. Claim 18 is allowable for the pertinent reasons that make claim 1 allowable.

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In sum, even if the first requirement of MPEP § 2143 were to be considered satisfied, the third requirement of MPEP § 2143 cannot be satisfied with the cited references, because the cited references do not teach each and every element of the present invention. Thus, the present claims are allowable.

Lack of Suggestion or Motivation to Modify or Combine the References

MPEP § 2143.01 states that “the prior art *must* suggest the desirability of the invention.” (MPEP § 2143.01, subsection 1, emphasis added.) The Office Action asserts that it would have been obvious to modify Okamoto “to operate the fuel cell system under low temperature environments by using the heated antifreeze to directly melt the water in the water tank.” However, the prior art does not suggest that such is desirable. Okamoto does

not teach or suggest thawing any frozen water within a water tank. Instead, the entire purpose behind the teachings of Okamoto is to thaw the frozen water *within the fuel cell*.

Accordingly, the prior art does not suggest the desirability of the invention as claimed, and, therefore, the first requirement of MPEP § 2143 is not met for at least this reason.

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The Office Action recognizes that Okamoto does not teach a hot medium flow passage disposed in a water contact section of a water storage unit, and proffers the just-mentioned assertion that it is desirable to modify Okamoto to melt water in the water tank as motivation to obtain this missing feature. Assuming *arguendo* that the ordinary artisan would have wanted to melt water in the tank, there is still no motivation to modify Okamoto so that the hot medium flow passage is disposed around a water contact section. That is, the modification proffered in the Office Action, which places the hot medium flow passage in a water contact section, even if desirable, still does not lead the ordinary artisan to place the hot medium flow passage around the water contact section as claim 1 now recites. Accordingly, even if the motivation asserted in the Office Action was accepted as correct, there is still no motivation to arrive at each element of claim 1.

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The proffered motivation to modify the claims to arrive at the invention having at least some of the features present in the dependent claims is not directly related to those features. Put another way, the Office Action uses the alleged desire to melt water in the tank as a panacea that motivates the ordinary artisan to modify Okamoto to have each feature of the dependent claims regardless of whether those features are directly related to melting water in the tank. For example, assuming *arguendo* that it would have been desirable to melt water in the tank, such a desire, by itself, would not have lead the ordinary artisan to include a bypass unit bypassing the hot medium flow passage when a detected water temperature exceeds a present value, etc. For a *prima facie* case of obviousness to be established, a relationship sounding in cause-and-effect between the missing elements of Okamoto alleged to have been obvious to incorporate into Okamoto and the proffered motivation must be established. This is not the case for at least the dependent claims, and thus the first requirement of MPEP § 2143 is not met in regard to these claims for yet another reason.

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MPEP § 2143.01, subsection 6 states that “the proposed modification cannot change the principle of operation of a reference – If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810 (CCPA 1959).” In *Ratti*, the CCPA held that the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in the primary reference.” This substantial redesign would have resulted in changing a rigid seal to a resilient seal. Thus, a reference cannot be modified to render an invention obvious if the modification changes a principle of operation of the reference.

With the above in mind, it is respectfully submitted that because the teachings of Okamoto rely on a principle of operation in which the frozen water in the fuel cell is thawed, and not thaw any frozen water in a water tank, modifying Okamoto to thaw frozen water in the water tank would change the principle of operation of Okamoto. Because modifying Okamoto to utilize a hot medium flow passage in a water tank changes the principle of operation of Okamoto, just as changing the rigid seal to a resilient seal was found to change the principle of operation in *Ratti*, “the teachings of [Okamoto] are not sufficient to render the claims *prima facie* obvious.” (MPEP § 2143.01, emphasis added.)

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In summary, because of the lack of suggestion or motivation in the prior art to modify the references, the first requirement of MPEP § 2143 has not been met and, hence, a *prima facie* case of obviousness has not been established.

#### Lack of a Reasonable Expectation of Success

MPEP § 2143.02 permits references to be modified or combined to reject a claim as obvious only if there is a reasonable expectation of success. There is no evidence in the references, and certainly none identified in the Office Action, that one of ordinary skill in the

art would have had a reasonable expectation of success (even if incorrectly<sup>1</sup>) in achieving Applicant's invention by combining the references. For example, the Office Action asserts that it would have been obvious to modify Okamoto so as to melt frozen water in a water tank. However, as noted above, Okamoto is directed towards melting frozen water in the fuel cell. The Ordinary Artisan would have considered the diversion of heat into a water tank to melt frozen water in that tank (which takes a considerable amount of energy due to the transition of frozen water to liquid water) to be detrimental to the goal of melting ice in the fuel cell. Thus, one of ordinary skill in the art would not have seen the combination of the references as producing a successful fuel cell device in which frozenwater in the fuel cell is adequately melted. Because of this, the second criteria of MPEP § 2143 has not been met in the Office Action, and a *prima facie* case of obviousness has therefore not been established.

### New Claims

New claims 19-22 are allowable for at least the reasons that make claims 1, 17 and 18 allowable, as detailed above. Claims 19-21 are also allowable because they also respectively recite that the second antifreeze circulation flow passage / means branches away from the first antifreeze circulation flow passage / means.

Claim 22 is allowable for the reason that it further recites the action of circulating the antifreeze solution to the fuel cell and the radiator through the second antifreeze circulation flow passage includes circulating antifreeze solution to the hot medium flow passage.

Support for these new claims may be found, among other places, in Fig. 1 of the application as originally filed. Entry and allowance is requested.

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<sup>1</sup> Note that if the requirement was that the ordinary artisan would have *correctly* believed that the combination/modification would not have succeeded, any examined invention to which the second requirement of MPEP 2143 was applied would necessarily be unworkable, rendering the second requirement meaningless.

**Conclusion**

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

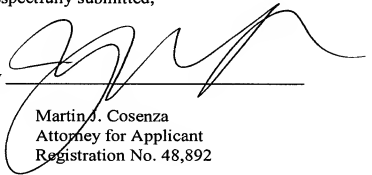
Examiner Chuo is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

Date

April 23, 2007

By



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